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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,126	09/30/2003	Phong V. Chau	HITG.053A(0522)	5668

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Chambliss, Bahner & Stophel, P.C.
Two Union Square
1000 Tallan Building
Chattanooga, TN 37402

EXAMINER

NGUYEN, TAI V

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/675,126

Applicant(s)

CHAU ET AL.

Examiner

Tai Van Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 11, 19, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 6-8, 10-18 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/30/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 9, 11, 19 and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Xue et al (US 6,278,592).

As applied to claims 1, 11 and 21, Xue et al disclose a method of forming a spin valve sensor, comprising: forming a ferromagnetic free layer (146, Fig. 6) structure that has a magnetic moment; forming a ferromagnetic pinned layer (152) structure having a magnetic moment; forming a nonmagnetic conductive spacer layer (148) between the free layer structure and the pinned layer structure; forming an anti-ferromagnetic pinning layer (150) coupled to the pinned layer structure for pinning the magnetic moment of the pinned layer structure; forming hard magnetic thin films (220, 222) on both sides of at least a portion of the free layer structure, the ferromagnetic pinned layer structure, the nonmagnetic conductive spacer layer and the anti-ferromagnetic pinning layer; and forming a hard bias seedlayer structure adjacent to at least a portion of the free layer structure, the ferromagnetic pinned layer structure, the nonmagnetic conductive spacer layer and the anti-ferromagnetic pinning layer (see sequence Fig. 6-9), wherein the forming the hard bias seedlayer structure comprises forming at least a first layer (214)

comprising silicon such as silicon/tantalum-nitride (see column 5, lines 55-65) and a second layer comprising chromium (216).

As applied to claim 2, Xue et al disclose the forming the anti-ferromagnetic pinning layer further comprising forming a layer of platinum manganese (column 3, lines 60-63).

As applied to claims 3 and 22, Xue et al disclose forming the hard bias seedlayer structure further comprises forming a layer of tantalum adjacent the silicon layer (column 5, lines 55-60).

As applied to claim 9, Xue et al disclose forming the hard bias seedlayer structure further comprises forming a layer of tantalum, silicon (214) and chromium (216).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Xue et al.

Regarding to claim 4 and 5, it would have been an obvious matter of engineering design choice to choose any desired material of tantalum and a silicon layer with equal thickness or forming the tantalum layer with a thickness half a thickness of silicon layer,

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since applicants have not disclosed that the claimed that forming the tantalum and silicon layer with an equal thickness, or forming the tantalum layer with a thickness half a thickness of silicon layer, solves any problem or is for any particular purpose and it appears that the invention would perform well with thicknesses of tantalum and silicon layer as applied in the art above.

Allowable Subject Matter

4. Claims 6-8, 10, 12-18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

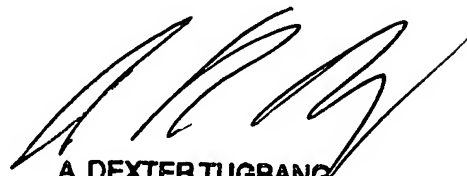
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tai Van Nguyen whose telephone number is 571-272-4567. The examiner can normally be reached on M-F (7:30 A.M - 4:30 P.M).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TN.
January 19, 2006



A. DEXTER TUGBANG
PRIMARY EXAMINER